

# **SELF-EFFICACY OF UNDERGRADUATE DENTAL STUDENTS IN PERFORMING MOLAR ENDODONTICS**

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## **ABSTRACT**

**Background:** *Self-efficacy means the quality of a person to feel confident and competitive that is described as self-assurance that one can effectively carry out the activities and getting adequately trained is a requirement*

**Aim:** *To evaluate the efficiency of dental undergraduate students in managing and performing molar endodontic treatment.*

**Methodology:** *A questionnaire-based survey was conducted for two batches of dental students in College of Dentistry, Prince Sattam bin Abdulaziz University during their internship program. The data related to the number of molar endodontics performed by the participating students was collected from the clinical records of the patient management software. The data was analyzed using descriptive statistics.*

**Results:** *A total 70 undergraduate dental students of two batches 2017-2018 and 2018-2019 who were doing their internship had participated in this study. The self-efficacy level among the undergraduate dental students was found to be moderate.*

**Conclusion:** *The self-efficacy among the undergraduate dental students of College of Dentistry, Prince Sattam bin Abdulaziz University in two batches of the year 2017-18 and 2018-19 was found to be moderate. The more root canal treatment done with good endodontic supervision during the undergraduate program increases the self-efficiency among the undergraduate dental students.*

**Keyword:** *Dental; Dental students; Endodontics, Molar; Self efficacy*

## **INTRODUCTION**

The need to conduct root canal treatment may be stressful for a dental health practitioner [1]. The actions of an individual and the amount of exertion they can make when coping with difficult circumstances are primarily dictated by their self-efficacy [2]. Self-efficacy means the quality of a person to feel confident and competitive that is described as self-assurance that one can

effectively carry out the activities and getting adequately trained is a requirement [3]. While self-efficacy is a term closely linked to self-confidence, self-efficacy is built on the faith of a person that he or she will be successful. In the background of this study, it signifies to the capability of the dental practitioner to feel secured while performing root canal treatment [4]. While most general dental practitioners understand the significance of treatment quality [5] and believe that they are qualified to perform root therapy, they appear to perform root canal therapy with insufficient compliance to quality that is below the standard of treatment [6, 7]. It has been recorded that difficult cases are being sent to endodontic specialists [8]

The basic aim of dental education is to train the health practitioners to conserve and enhance the oral health status of individuals and the population [9] and to resume to acquire skills and experience in practice throughout their lifetime [4]. The dental school is responsible for delivering a high-quality teaching atmosphere and equipping students with enough clinical training [10]. There are contradictory reports on how satisfactorily, in their own opinion, students about to graduate or dental graduates were trained by their undergraduate endodontic education for their job as a general dental practitioner [11, 12]. Most of them encounter difficulties and not very sure about doing the difficult root canal treatment and also felt inefficient in administering simple treatments of the root canal as well [2].

Newly trained dentists are required to possess the expertise and experience to execute a wide variety of clinical dental procedures independently in compliance with the guidelines after a five-year dental education [3]. Study on the self-efficacy of general dental practitioners with respect to endodontics is lacking. In addition, regarding the self-efficacy of undergraduate dental students, not enough is known. Undergraduate dental programs are based on a list of competencies to be completed by the student in order to be able to function professionally in a dental practice after the graduation from the dental school [13]. Students who are with high self-efficacy perform demanding and complex tasks more easily than the students with low self-efficacy [14]. The self-efficacy of students is sensitive to changes in teaching strategies and perform a spontaneous role in the growth and usage of academic skills [14]. In addition, the greater the self-efficacy, the higher the persistence and the higher the opportunity that the assignment will be completed effectively [15].

This was questionnaire-based study that was conducted for two batches of dental students (College of Dentistry, Prince Sattam bin Abdulaziz University) during their undergraduate program. The main aim of the present study was to evaluate the efficiency of dental undergraduate students in managing and performing molar endodontic treatment related to the degree to which they obtained endodontic training.

## **METHODOLOGY**

The survey was done on 70 dental undergraduate students of two batch of the year 2017-18 and 2018-19 during their internship program from the College of Dentistry, Prince Sattam bin Abdulaziz University. The study was conducted to evaluate the efficiency of dental undergraduate students in managing and performing molar endodontic treatment. Ethical approval was obtained from Human Research Ethics Committee at Prince Sattam bin Abdul Aziz University

A validated structured self-administered questionnaire consisting of 10 questions with 4-point Likert scale was use evaluate the efficiency of dental undergraduate students in managing and performing molar endodontic treatment. An open-ended response option on questions with closed-end alternatives has been offered in order to obtain accurate information. This allowed

the dental undergraduate students to respond if they did not feel that their opinion was balanced by the closed-ended options. In order to proceed to the next question, an answer to the previous questions had to be recorded. All dental undergraduate students who were doing internship after the final year of dental education program were included in the study.

Data collection was done by distributing a self-administered questionnaire to the dental undergraduate students who were posted in different departments of the institution during their internship program and the respective year of academic education. The students were informed, and the consent was obtained before the survey. The students were given the paper self-administered questionnaire that contained the General Endodontics self-efficacy scale. The data related to the number of molar endodontics performed by the participating students was collected from the clinical records of the patient management software. This questionnaire was having 10 questions on general endodontics like, I feel confident while root canal treating molars, I am confident to independently handle molar endodontics, I have the confidence to handle complex molar anatomy, When faced with difficult molars, I can confidently handle the situation, When in trouble while treating molars, I generally remain calm, When mishaps occur while treating molars, I usually don't require help, I am confident in handling any unforeseen situation while treating molars, When confronted with additional canals, I am confident in my approach, I am confident in reading the radiographs when performing molar endodontics and I am confident about perfecting molar endodontics with more experience. A four-point Likert scale was coded as Not all true, Hardly true, Moderately true and Exactly true. The internal reliability of the General Endodontic self-efficacy scale was measured with Cronbach alpha between 0.76 to 0.90. The scoring was done as Not all true=1, Hardly true=2, Moderately true=3 and Exactly true=4. The total score is calculated by finding the sum of the all items. For the General Endodontic Self-Efficacy Scale, the total score ranges between 10 and 40, with a higher score indicating more self-efficacy [16].

### **Statistical Analysis**

All Data was entered and analyzed using IBM SPSS version 26.0 software (IBM SPSS, Chicago, IL, USA software version 26.0). The descriptive analysis was done and expressed as mean, standard deviation (SD), frequency and percentage (%).

### **RESULTS**

A total 70 undergraduate dental students of two batches 2017-2018 and 2018-2019 who were doing their internship had participated in this study. All the undergraduate dental students participated in the survey (response rate 100%).

Table 1 and 2 demonstrate the descriptive statistics of undergraduate students of batch 2017-2018 and 2018-2019 with self-efficacy scale. The questions of the General Endodontic Self-Efficacy Scale together with the four-point Likert-type scale, Not all true, Hardly true, Moderately true and Exactly true. Majority of the students responded with moderately true option of the Likert scale.

Table 3 demonstrate the descriptive statistic of undergraduate dental students of batch 2017-2018 and batch 2018-2019 with self-efficacy level, mean self-efficacy score and number of molar RCT performed. The self-efficacy level was moderate among the undergraduate dental students.

### **DISCUSSION**

Self-efficacy varies from self-belief, assumed power and perceptions of performance and is discriminatory in the prediction of a range of academic results [14]. In various educational studies,

self-efficacy is used both within and outside the medical ground and seems to be a reliable outcome measure for evaluating teaching strategies in endodontics too. The questionnaire needs to be tailored to tasks in order to use self-efficacy as an outcome metric [2]. The General Endodontic Self-Efficacy Scale is a valid and reliable method of testing the self-efficacy among the undergraduate dental students with Cronbach alpha between 0.76 to 0.90 which suggest that the internal consistency is good. The questionnaire contained 10 questions with four-point Likert scale that was coded as Not all true, Hardly true, Moderately true and Exactly true. Responses to the question provided to the dental undergraduate students showed they were moderately true to exactly true. Almost all the students were well satisfied with the suggested clinical training, number of lectures and literature. Due to positive experiences, self-efficacy increases, but it also decreases due to negative experiences, especially if they arise during the early course of events when there has been little or no positive experience [17].

Our study results show moderate self-efficacy level among the undergraduate dental students which agree with the studies conducted among Turkish population [17] and Netherlands population [2]. The reason might be good supervision of undergraduate dental students by teachers or endodontists with excellent clinical knowledge and experience. As all the undergraduate dental students had succeeded in the summative test, they are sufficiently skilled in performing root canal treatment. However almost all undergraduate dental students in this study have done more root canal procedures on patients during their dental training undergraduate course. This study revealed mean self-efficacy score  $26.97 \pm 4.70$ , similar result was found in a study conducted among Netherlands population [2]. One may presume that undergraduate dental students should increase self-efficacy by performing as many root canal treatments as possible, but not too complicated ones. The clinical experience in more complicated cases will make them more aware of the reality of dealing with such cases [18]. This study revealed that every undergraduate dental student had performed two root canal treatment each, the data was collected from the clinical records of the patient management software. The European Society of Endodontic guidelines had stated that students should be competent to perform root canal treatment on uncomplicated anterior and posterior teeth [19]. During undergraduate education, the value of performing root canal treatments on patients can simply be to transition from competent to self-efficacious rather than to improve the degree of competence, it is important for the undergraduate dental students to be aware of the limits of their abilities [20]. The results of the present study may be useful in developing undergraduate endodontic programs in order to improve the self-efficacy of undergraduate dental students in endodontics. It would be important to research the self-efficacy of students in other endodontic programs to better understand self-efficacy and how it is correlated with undergraduate education. Self-efficacy, measured using the Endodontic General Self-Efficacy Scale mentioned here, tends to be a useful indicator of outcome to assess the self-efficacy among the undergraduate dental students. The aim of endodontic education should therefore be to improve not only the abilities of the learners, but also their self-efficacy. The General Endodontic Self-Efficacy Scale should be used on larger populations in the future to study what factors offers the students that are required to improve their skills as well as they achieve high self-efficacy.

## CONCLUSION

The self-efficacy level among the undergraduate dental students of College of Dentistry, Prince Sattam bin Abdulaziz University in two batches of the year 2017-18 and 2018-19 was

found to be moderate. The more root canal treatment done with good endodontic supervision during the undergraduate program increases the self-efficacy among the undergraduate dental students.

### CONFLICT OF INTEREST

The authors state no conflict of interest.

**Table 1: Descriptive statistics of the General Endodontic Self-Efficacy scale of undergraduate student 2017-2018 batch (n=33)**

Statements	Not all true n (%)	Hardly true n (%)	Moderately true n (%)	Exactly true n (%)	Mean	SD
I feel confident while root canal treating molars	2(6.1)	9(27.3)	17(51.5)	5(15.2)	2.75	0.79
I am confident to independently handle molar endodontics	2(6.1)	7(21.2)	20(60.6)	4(12.1)	2.78	0.73
I have the confidence to handle complex molar anatomy	5(15.2)	9(27.3)	16(48.5)	3(9.1)	2.51	0.87
When faced with difficult molars, I can confidently handle the situation	10(30.3)	6(18.2)	15(45.5)	2(6.1)	2.27	0.97
When in trouble while treating molars, I generally remain calm	8(24.2)	6(18.2)	14(42.4)	5(15.2)	2.48	1.03
When mishaps occur while treating molars, I usually don't require help	0	7(21.2)	22(66.7)	4(12.1)	2.90	0.57
I am confident in handling any unforeseen situation while treating molars	3(9.1)	6(18.2)	22(66.7)	2(6.1)	2.69	0.72
When confronted with additional canals, I am confident in my approach	0	8(24.2)	21(63.6)	4(12.1)	2.87	0.59
I am confident in reading the radiographs when performing molar endodontics	3(9.1)	5(15.2)	11(33.3)	14(42.2)	3.09	0.97
I am confident about perfecting molar endodontics with more experience	6(18.2)	4(12.1)	21(63.6)	2(6.1)	2.57	0.86

**Table 2: Descriptive statistics of the General Endodontic Self-Efficacy scale of undergraduate student 2018-2019 batch (n=37)**

Statements	Not all true n (%)	Hardly true n (%)	Moderately true n (%)	Exactly true n (%)	Mean	SD
I feel confident while root canal treating molars	3(8.1)	10(27.0)	21(56.8)	3(8.1)	2.64	0.75

I am confident to independently handle molar endodontics	5(13.5)	8(21.6)	20(54.1)	4(10.8)	2.62	0.86
I have the confidence to handle complex molar anatomy	4(10.8)	11(29.7)	17(29.7)	5(13.5)	2.62	0.86
When faced with difficult molars, I can confidently handle the situation	4(10.8)	8(21.6)	22(59.5)	3(8.1)	2.64	0.78
When in trouble while treating molars, I generally remain calm	2(5.4)	13(35.1)	18(48.6)	4(10.8)	2.64	0.75
When mishaps occur while treating molars, I usually don't require help	3(8.1)	12(32.4)	20(54.1)	2(5.4)	2.56	0.72
I am confident in handling any unforeseen situation while treating molars	3(8.1)	8(21.6)	22(59.7)	4(10.8)	2.72	0.76
When confronted with additional canals, I am confident in my approach	1(2.7)	12(32.4)	18(48.6)	6(16.2)	2.78	0.75
I am confident in reading the radiographs when performing molar endodontics	2(5.4)	10(27.0)	16(43.2)	9(24.3)	2.86	0.85
I am confident about perfecting molar endodontics with more experience	3(8.1)	6(16.2)	22(59.5)	6(16.2)	2.83	0.79

As shown in figure II, there was no significant statistical association between depression and sociodemographic characteristics of the studied women ( $p > 0.05$ ) except for socio-economic character (**P value < 0.005**)

**Table 3: Descriptive statistic of undergraduate dental students with self-efficacy level, mean self-efficacy score and number of molar RCT performed.**

Variable	Low	Moderate	high	Total	Mean	SD	Total molar RCT performed
Batch 2017-2018	0	28	5	33	26.96	2.65	66
Batch 2018-2019	4	22	11	37	26.97	6.20	74
Total	4	50	15	70	26.97	4.70	140

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